Tatemi SHIMIZU*: **An observation on *Scirpus iseensis*, sp. nov.**

清水建美*：イセウキヤガラとその生態

In the years 1964 and 1965, I had the opportunity to make several visits to the downstream areas of the socalled Kiso-sansen Rivers as a member of the Kiso-sansen Survey Team, which was organized in 1963 under the leadership of Prof. K. Koizumi. The team was conducted as an synthetic scientific research in the area covering the lower district of the Kiso-sansen and the inner district of the Ise Bay. I was in charge of a floristic and ecological survey of macrohydrophytes of this area. In the estuarine zone I came across a plant, which was proved to be an undescribed species of *Scirpus* in later studies. The purpose of the present paper is to describe this new species with an ecological consideration of the type locality.

I wish to express my hearty thanks to Prof. K. Koizumi and the colleagues of the team for their kind encouragements throughout this study. Thanks are also due to Dr. T. Koyama who provided me with useful informations as to the taxonomy of this plant. I am much indebted to the Chubu Branch of the Ministry of Construction for the financial aid.

Morphology The new species hereby named *Scirpus iseensis* is a member of the section Bolboschoenus Aschers., which is characterized by the tuberiferous stolon, the elongated leaves, the culm-like or leaf-like bracts and the subulate hypogynous

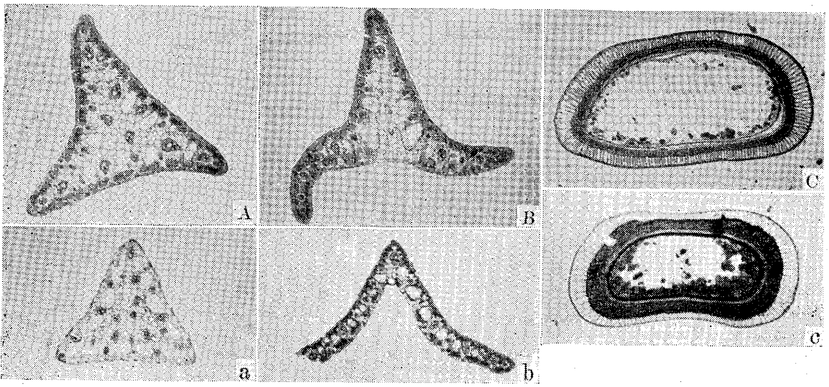

Fig. 1. Morphological comparison between *Scirpus iseensis* (A-C) and *S. planiculmis* (a-c). A. a: culm. B. b: leaf blade. C. c: achene. ×14. Material: cultivated, both from the lower course of the Kiso-sansen Rivers.

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* Biological Institute & Herbarium (SHIN), Shinshu University, Matsumoto, Japan. 信州大学教養部生物学教室.

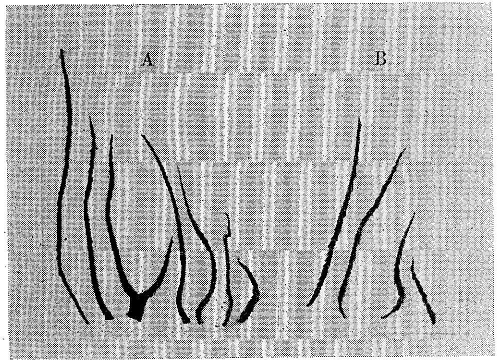

Fig. 2. Hypogynous bristles of *Scirpus iseensis* (A) and *S. planiculmis* (B), Materials: both from the lower district of the Kiso-sansen Rivers. ×10.

bristles¹⁾. Among the species hitherto attributed to this section, *S. planiculmis* Fr. Schm., described from Saghalien, is most closely related to the present new species. However they are clearly distinguished from each other in the leaf form and the number of hypogynous bristles as well as in some ecological respects. Although I have not yet seen the type speci-

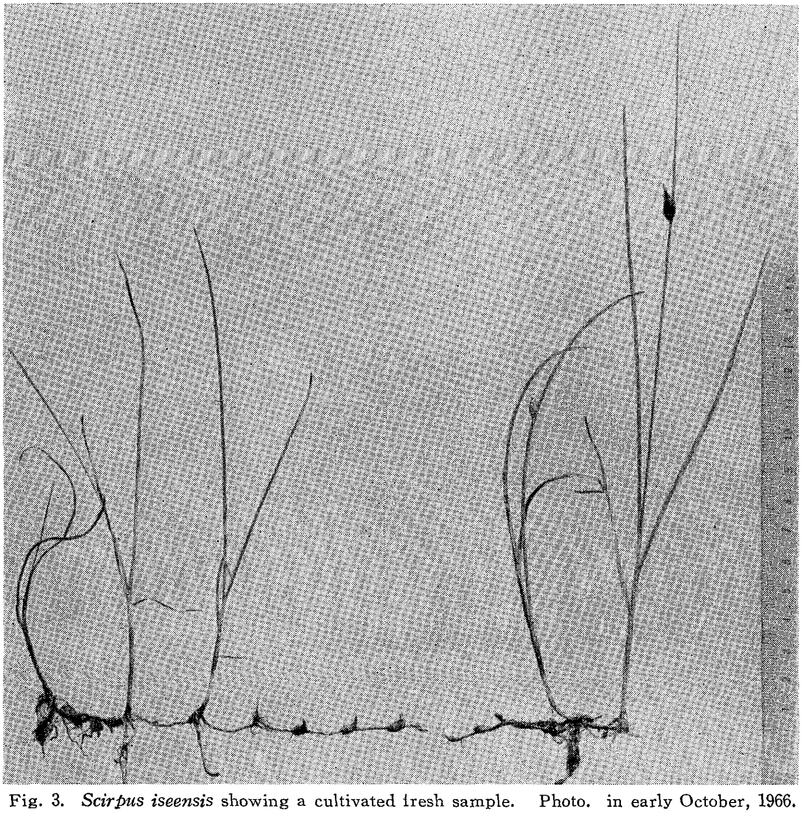

Fig. 3. *Scirpus iseensis* showing a cultivated fresh sample. Photo. in early October, 1966.

men, according to the original description²⁾, in *S. planiculmis* the leaves are flat and the hypogynous bristles are 4 in number. All the specimens referable to this species that I have examined, including a topotype specimen 'Susuya-gawa, G. Nakahara s. n. (TI)', show the leaf characters as such, though the number of hypogynous bristles may vary from 2 to 4 (Fig. 1, b; Fig. 2, B). *S. iseensis* differs from *S. planiculmis* in its leaf blades which are apparently triangular in cross section and in 6 or 7 hypogynous bristles in a floret (Fig. 1, B; Fig. 2, A). It is also noticeable that the spikelet is nearly always solitary and completely sessile, so that it looks like that of a member of the sect. Actaeogeton. The spikelets in *S. planiculmis* are usually a few to an inflorescence forming a head on the culm, and are mostly more or less peduncled. So far as my investigation went, in the locality of *S. iseensis*, only a single colony had plants with two or more spikelets. Even in this case, no peduncled spikelets were found. The result of sand culture of this species over three years in our laboratory shows that these characters of leaves and hypogynous bristles remain unchanged, though plants became considerably dwarf (Fig. 3). *S. maritimus* L. (var. *maritimus*), a native of Europe and adventive in Atlantic North America, is, in my opinion, different from *S. planiculmis* in having generally trigonous achenes, 3-cleft stigmas and 6 hypogynous bristles (Fig. 4), and from *S. iseensis* it differs also in flat leaves, trigonous achenes and 3-cleft stigmas. The following is the description of the new species here proposed.

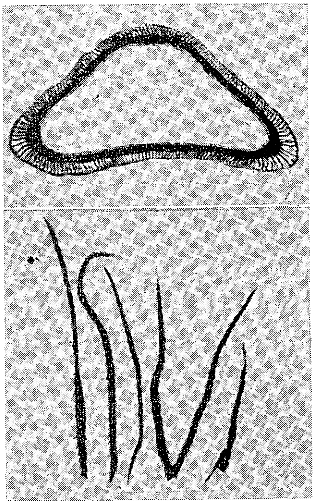

Fig. 4. An achene (×14) and hypogynous bristles (×10) of *Scirpus maritimus* var. *maritimus*. Material: Denmark, E. B. Hoffmeyer, 7 (SHIN).

Scirpus (Bolboschoenus) **iseensis** T. Koyama et T. Shimizu, sp. nov.

Herba perennis, stolonifera, stolonibus tuberiferis, culmis (25–) 45–80 cm altis, foliis 2–4 elongatis, aperte triangularibus in transsectionis, spiculis quasilateralibus sessilibus unicis vix pluribus, squamis imbricatis fuscis scariosis ovatis apice breviter aristatis puberulis, stylis filiformibus apice bifidis, acheniis obovatis 3.5 mm longis 3 mm latis nitidis planoconvexis vel biconcavis, setis hypogynis 6 vel 7 minutissime retrorsim scabris.

Nom. Jap.: Ise-ukiyagara (Shimizu 1965).

Specimens: Honshu. Pref. Mie: the lower course of the Ibi River, Kuwana-shi, T. Shimizu 14472 (KYO——type; isotype in SHIN, TI & TNS); ibid., T. Shimizu 14703 (KYO, SHIN, TI & TNS); ibid., T. Shimizu 14471——with 2 or 3 spikelets crowded (KYO, SHIN, TI & TNS); the lower course of the Nagara River, Kuwana-gun, T. Shimizu 14344 (KYO, SHIN & TI); the lower course of the Kiso River, Kuwana-gun, T. Shimizu 14293 (KYO, SHIN, TI & TNS).

Perennial from tuber-bearing rhizomes. Tuber moderately thickened, as wide as culm. Stolons long creeping, terminated by a tuber. Culms solitary from a tuber, erect, (25-) 45–80 cm tall, 2–5 mm thick, 3-angled, smooth, 1–2-noded toward the base. Leaves 2–4, basal or subbasal, long sheathing and long bladed; sheaths up to 16 cm long, the orifice membranaceous, truncate or concave; blades shorter than to as long as culm, 2–5 mm wide, sharply 3-angled. Bracts usually 2, the lower one culm-like, erect continuing to culm, (7-) 10–28 cm long, the upper one patent, shorter than to as long as spikelet, rarely elongate to 6 cm. Spikelets pseudo-lateral, sessile, usually solitary but exceedingly rarely in a cluster of 2 or 3, ovoid or ovoid-ellipsoid, 1–2 cm long, 5–8 mm across at maturity, many-flowered, ferrugineous. Scales boat-shaped, ovate, truncate at the base, 6–7 mm long, 3–5 mm wide, short-awned at apex, membranaceous, castaneous- to reddish-brown, puberulous outside with brownish minute hairs on the upper half and on the marginal portions, 1-costate. Achenes obovate, plano-convex or slightly biconcave, about 3.5 mm long, 3 mm wide, brownish, glossy. Styles filiform, 2-cleft at apex. Hypogynous bristles 6–7, subulate, retrorsely scabrous with minute spinules, caducous, 1–4.5 mm long.

Ecology As was stated in the previous paper³⁾, the macrophytic vegetation in the estuaries of the Kiso-sansen Rivers is represented by both the emerged plants such as *Phragmites communis*, *Carex scabrifolia* and *Scirpus iseensis*, and the submerged grass, *Zostera nana*. The distinct zonation of these representatives is emphasized especially on the gently sloped shoals. *Phragmites* is most abundant covering the major part of any shoal. *C. scabrifolia* inhabits along the margin and in open spaces of the *Phragmites* communities. *S. iseensis* occupies outside of the territory of *C. scabrifolia*. This zonation suggests that *S. iseensis* is of the most halophytic nature among these three kinds of the emerged plants. The area of the *Scirpus* never goes up to more than 4 km from the river mouth while the *Carex* extends to 6 km or so and the *Phragmites* invades into the fresh water region. Samples no. 7 and no. 8 in Fig. 5 correspond with the upper limits of the area of the bulrush.

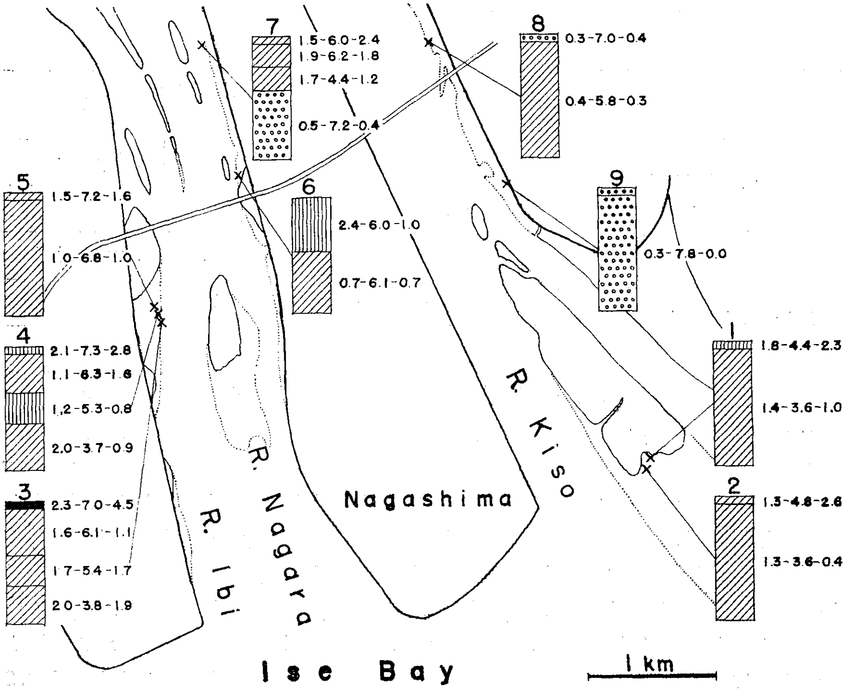

Fig. 5. Habitat of *Scirpus iseensis* and *S. planiculmis* in the lower course of the Kiso-sansen Rivers.
Soil texture of every profile up to 30 cm deep is illustrated.
▢ sand; ▨ sandy loam; ▥ loam; ■ clayey loam.
Figures denote water content (%), pH value and salinity (‰).
Sample no. 9, *S. planiculmis*; others, *S. iseensis*.

Due to the tidal action, the water depth in this area fluctuates hour by hour, so that these plants are sometimes entirely submerged and sometimes exposed. As for *S. iseensis*, the plants are submerged with brackish water about twice as deep as their height at the time of a flow, but completely exposed at the time of an ebb. The relation between maximum water depth and the grass height is shown in Table 1. It is interesting that a few colonies of *S. planiculmis* found in this area always stand inside of the *C. scabrifolia* zone and are never submerged even at the time of a flow.

Every soil profile up to 30 cm in depth together with the surface layer was sampled at 8 stations of *S. iseensis* and at one station of *S. planiculmis* during the ebb tide in middle August in 1965. The soil characters examined were soil texture, Tab. 1. Maximum water depth and grass height in the estuaries of the Kiso-sansen Rivers

Plant	Station (km from the river mouth)	Water depth (cm)	Grass height (cm)	Date
Carex scabrifolia	I 1.6	70—80	43—50	May '65
	N 5.8	24	45	〃
Scirpus iseensis	K 0	100—105	60—67	Aug. '65
	I 1.6	100—105	70—75	〃
	N 3.6	110	45	〃
	K 4.0		45	〃
Scirpus planiculmis	K 2.5	0	60	〃

water content, pH value and salinity. The soil salinity was determind by Mohr's method, in which the amount of chlorine was measured by the volumetric analysis through titration of the standard caustic silver solution. The results are illustrated in Fig. 5. As evidently shown in Fig. 5, the sandy loam and the loam appear to be preferable for *S. iseensis*, while the sand seems to be preferable for *S. planiculmis*. The figures appended to each soil profile, for example, 1.8, 4.4 and 2.3 for the surface layer of Sample No. 1, denote the water content (%), pH value, and soil salinity (‰) respectively. The soil salinity is strongest on the surface layer in every case. It ranges from 0.3 to 4.5‰ for *S. iseensis*, but could not be detected for *S. planiculmis*. This evidence may imply the fact that *S. planiculmis* could not be a member of the salt marsh vegetation in eastern Hokkaido, though it occurs fairly abundantly in the area⁴⁾.

One more ecological distinction between *S. iseensis* and *S. planiculmis* is the flowering season. In this area, the former is blooming from July to August, but May to June in the latter. This tendency was precisely followed also by the plants cultivated at Matsumoto. It can, therefore, be concluded that *S. iseensis* and *S. planiculmis* are never conspecific, differing from each other not only in the morphological characters but also in the ecological aspects.

References

1) Koyama, T. (1958) Jour. Fac. Sci. Univ. Tokyo, Sec. III, Bot., **7**: 271-

366. 2) Schmidt, F. (1868) Reisen Amurl. u. Sachal. 190-191, t. 8, f. 1-7. 3) Shimizu, T. (1965) Research Rep. Kisosansen Survey Team No. 2, 573-593. 4) Ito, K. (1963) Sapporo Bull. Bot. Gard. Hokkaido Univ. No. 1, 1-102.

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木曽三川河口資源調査団の一員として，私は，1964・65 の両年，揖斐，長良，木曽のいわゆる木曽三川の河口部において，水生植物の調査をおこなった。その折，エゾウキヤガラに似た植物が，挺水植物の最深部を占めて，かなり大量に生育しているのをみた。この植物の分類について，しばらく，疑問を感じていたが，その後，同域からエゾウキヤガラそのものを発見し，比較栽培を続けるとともに，他地域でのエゾウキヤガラの観察に加えて，小山鉄夫氏の御教示を頂くことができ，漸く，新種であると確信するに至った。すなわち，**イセウキヤガラ**である。これは形態学的には，葉身が鋭三稜形であること，栄養条件のいかんにかかわらず小穂がほとんど常に1個であること，刺針状花被片が6ないし7本であることなどが，エゾウキヤガラと異る重要な特徴である。また，生態学的には，イセウキヤガラはシオクグ帯以深に生育し，満潮時には完全に水没するが，エゾウキヤガラの領域はシオクグ帯以浅の全く冠水しないところである。耐塩性の差といえよう。さらに花期は7月ないし8月であり，同域のエゾウキヤガラに比して1ケ月以上の差が認められる。

○オバコの葯の色（水島正美）Masami MIZUSHIMA: Colour of anthers in *Plantago asiatica* L.

オオバコは雌蕊先熟の花が無限花序をなしてつく。各地で開花したものを注意して見て来た結果，葯に薄藤色と黄白色の両様があるのを知った。両者は個体によって一定してはいるが，同一地点に混生している。花柱はどちらも白く（草木図説の語を借りれば，水白色の表現がふさわしい），花被にも目に立つ程の色の差はない。慾斎の本は葯の色がよく記してあるので参考になるが，オオバコの条下には帯紫色の旨を明記しており，事実此の方が各地に普通に見られる。黄白葯の個体は白花品或は淡色品に相当する場合と考えて良く，品種の級位でなら命名に値する。本種の葯の色は腊葉にすると容易に変色してしまうので，リンネが命名した時の個体はどちらであったかの決定は不可能であろう。そこで普通な薄藤色の葯を持つものにオオバコの名を残し，黄白色の一形を**シロオオバコ**と新称し，次のように記載する。邦産種のかかる変異に対しては，シロバナハクサンオオバコが命名されたに過ぎない。

Plantago asiatica L. f. **ochranthera** Mizushima, f. nov.

A plantis vulgaribus cum antheris lilacinis differt haec forma isdem ochroleucis.

Holotype: on gravelly shaded wayside along the west coast of Lake Nakatsuna, 830 m alt. Nakatsuna, Ômachi, Nagano Pref., Honshu (Aug. 11, 1957, M. Mizushima, 14798)—MAK-4735. （東京都立大学　牧野標本館　水島正美）